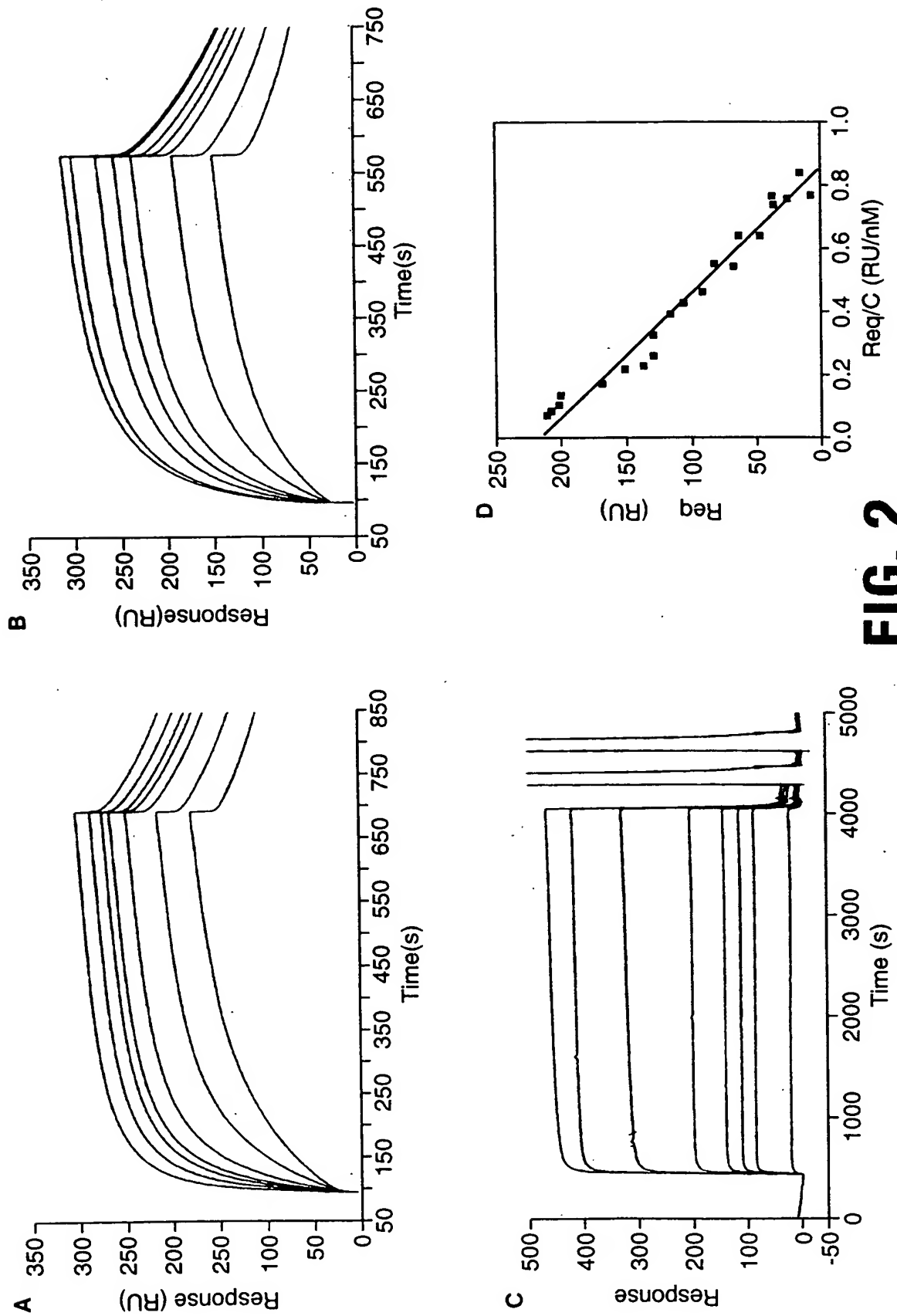


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**FIG. 2**

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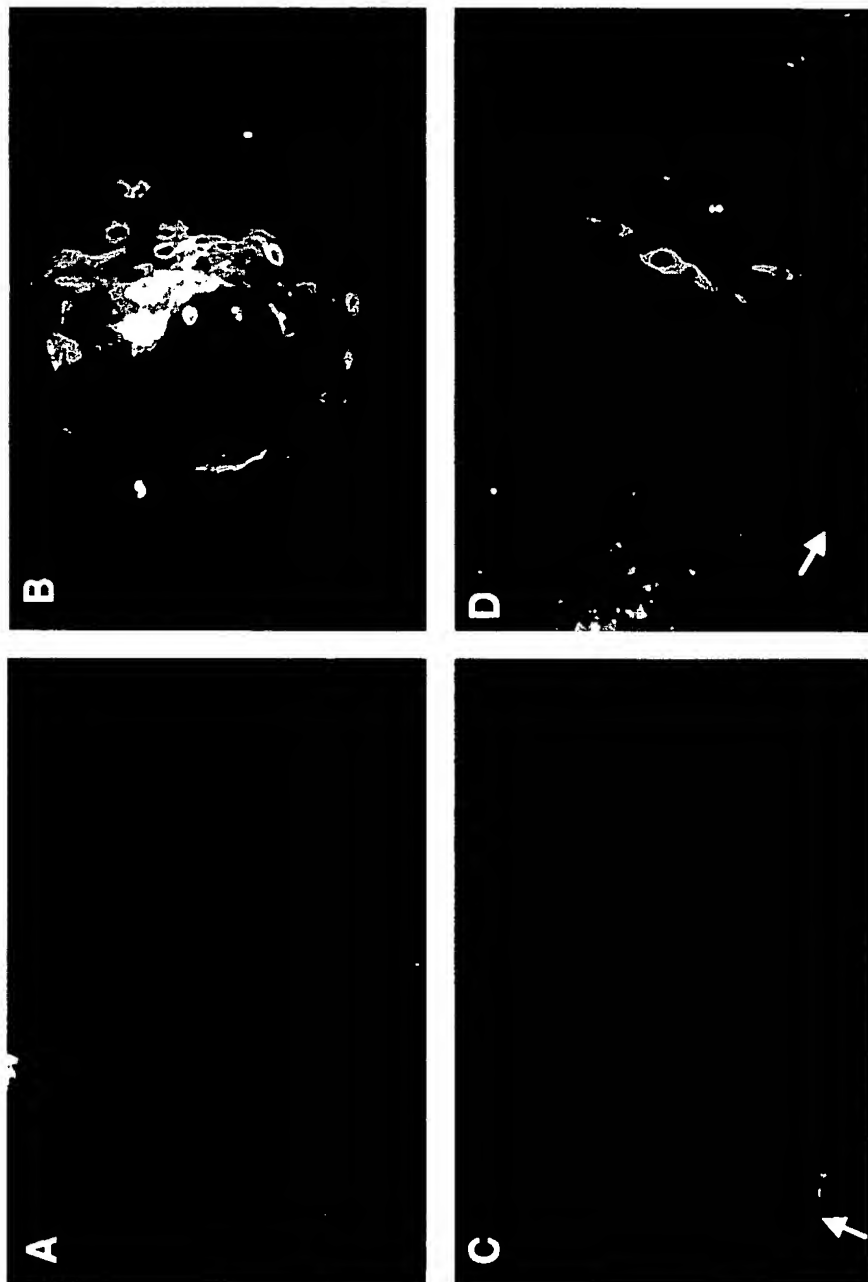


FIG. 3

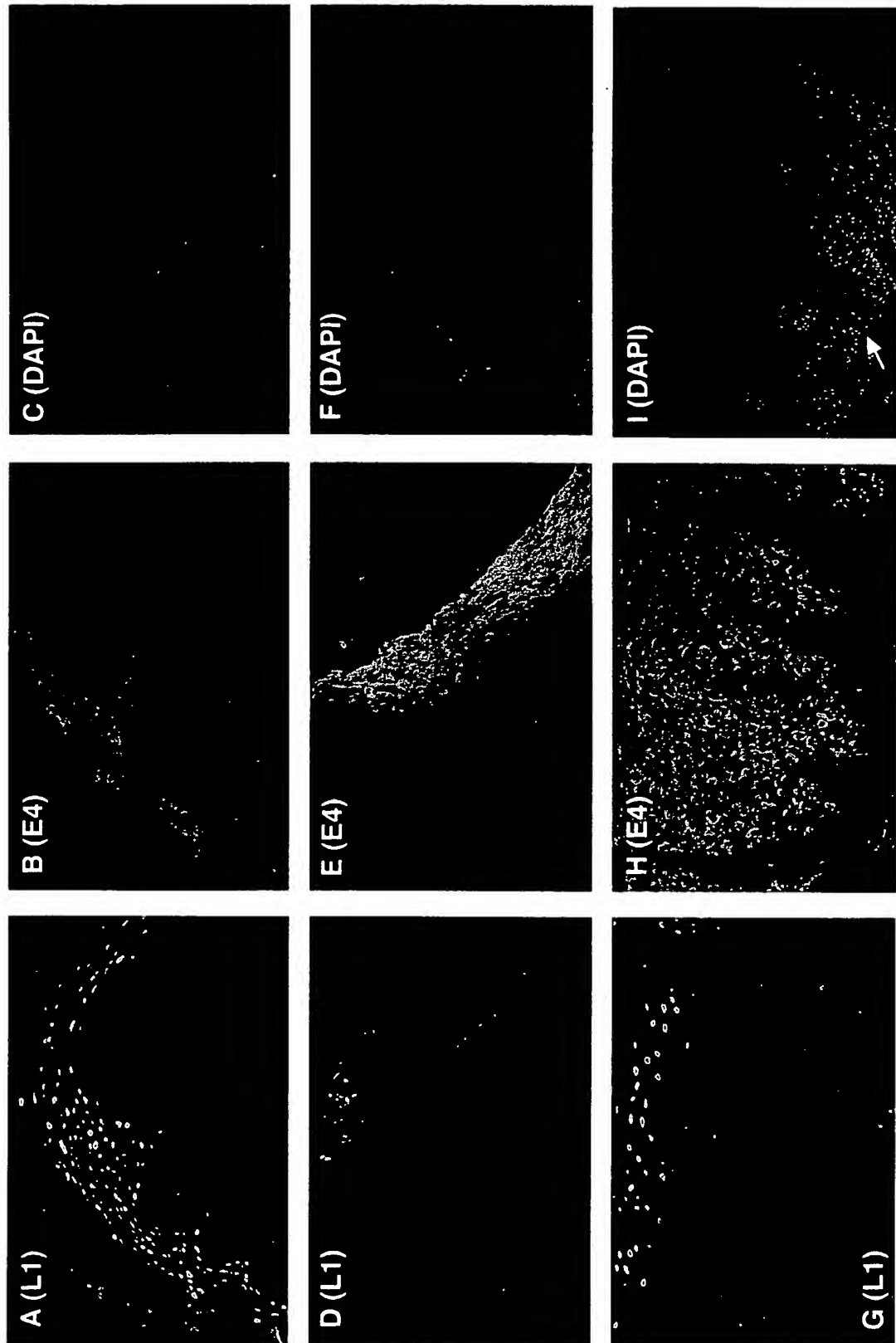


FIG. 4

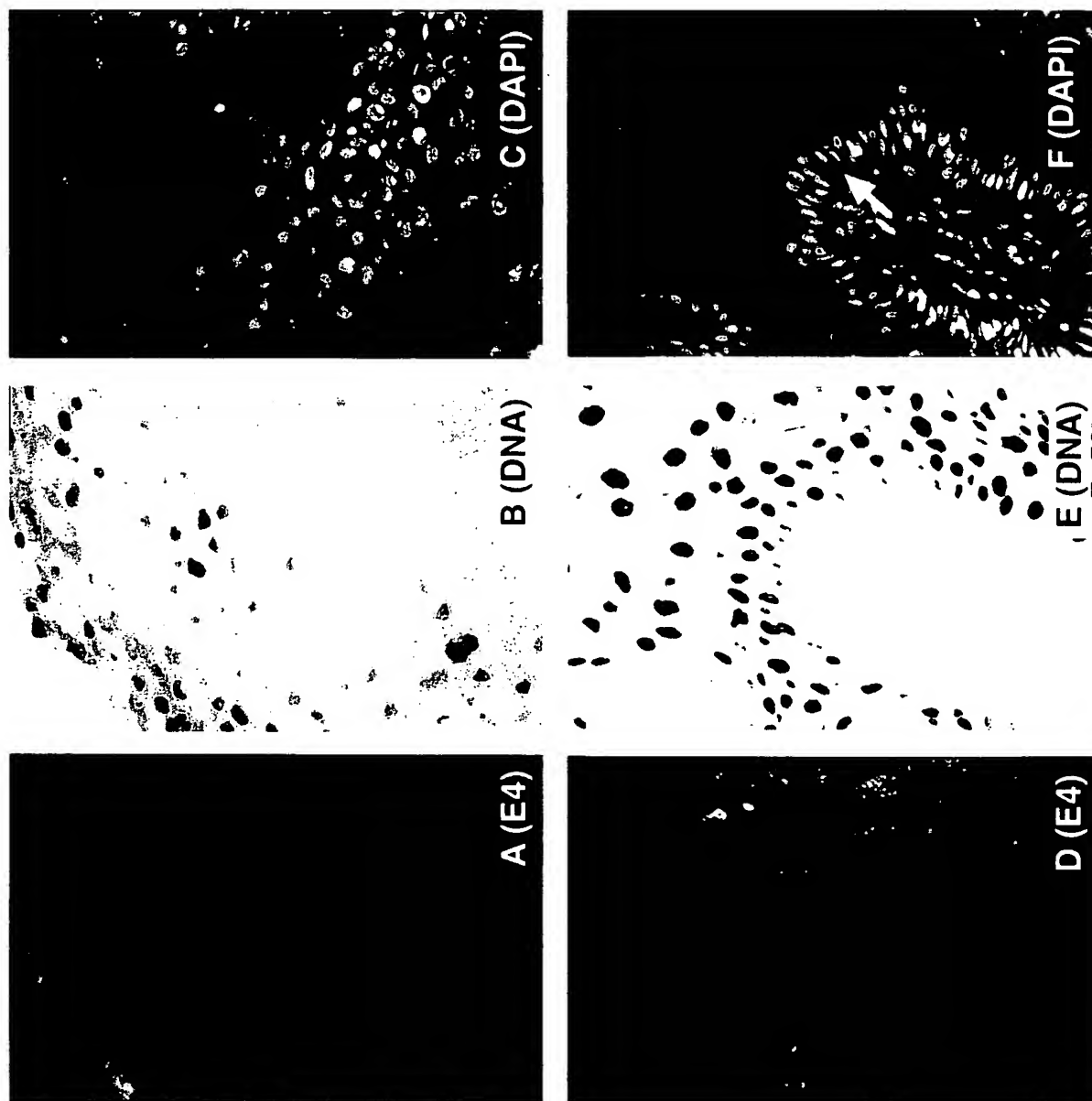


FIG. 5

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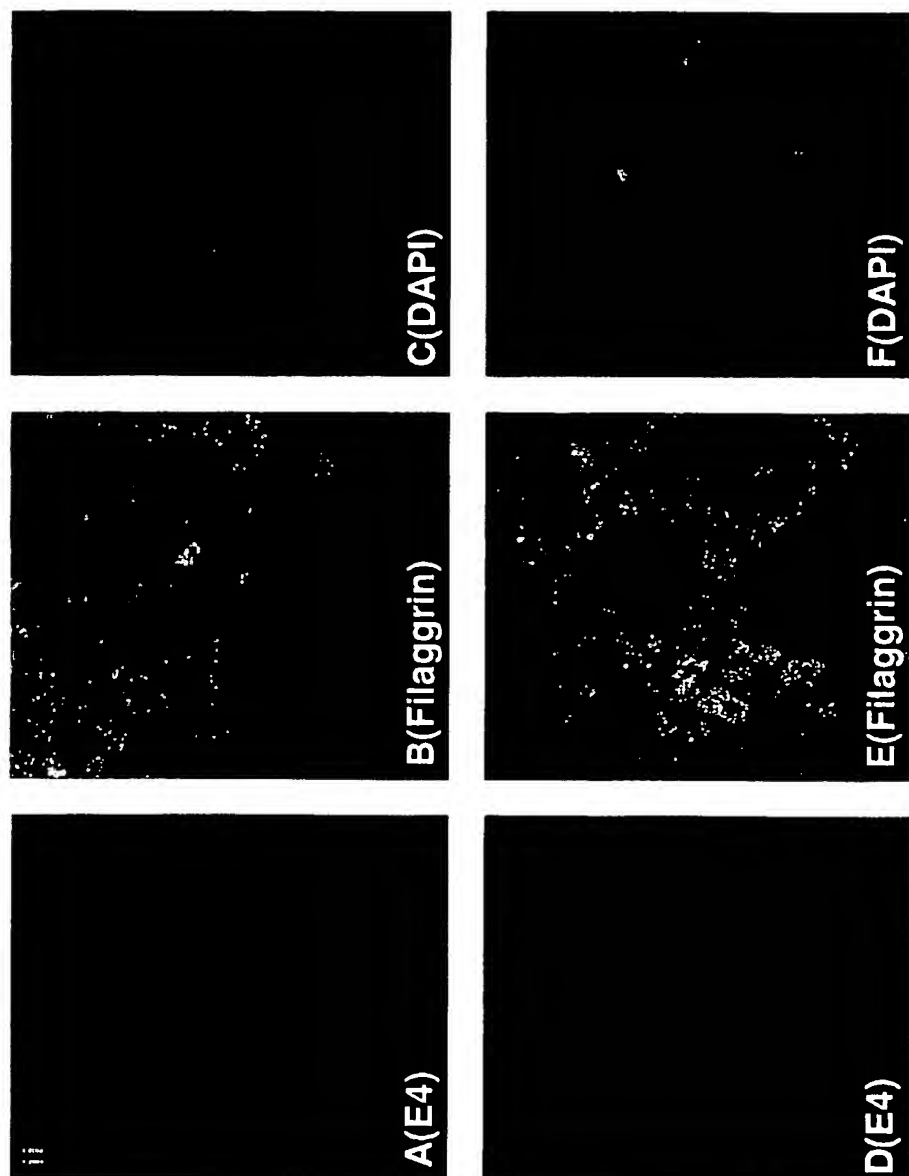


FIG. 6(i)

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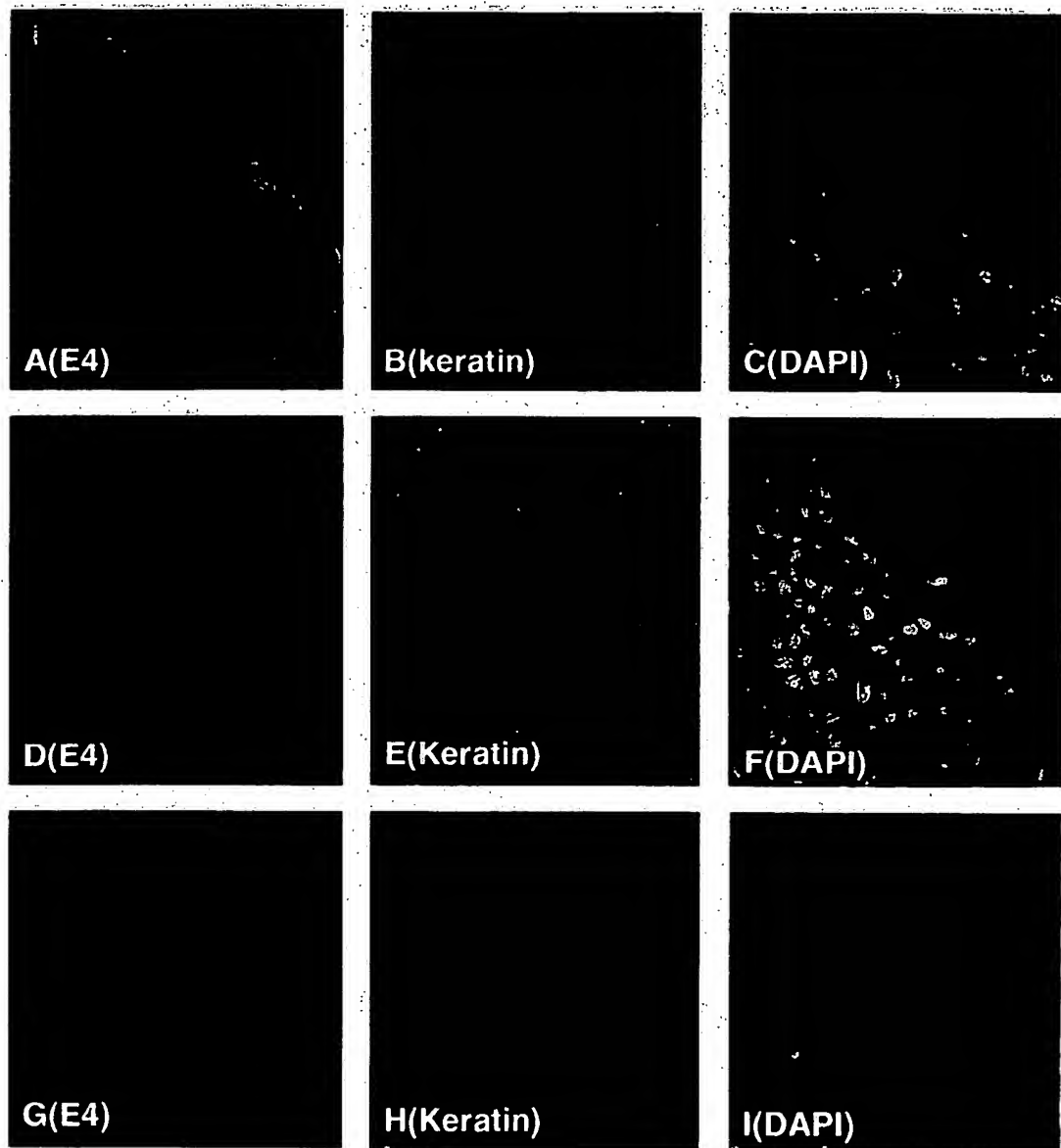


FIG. 6(ii)

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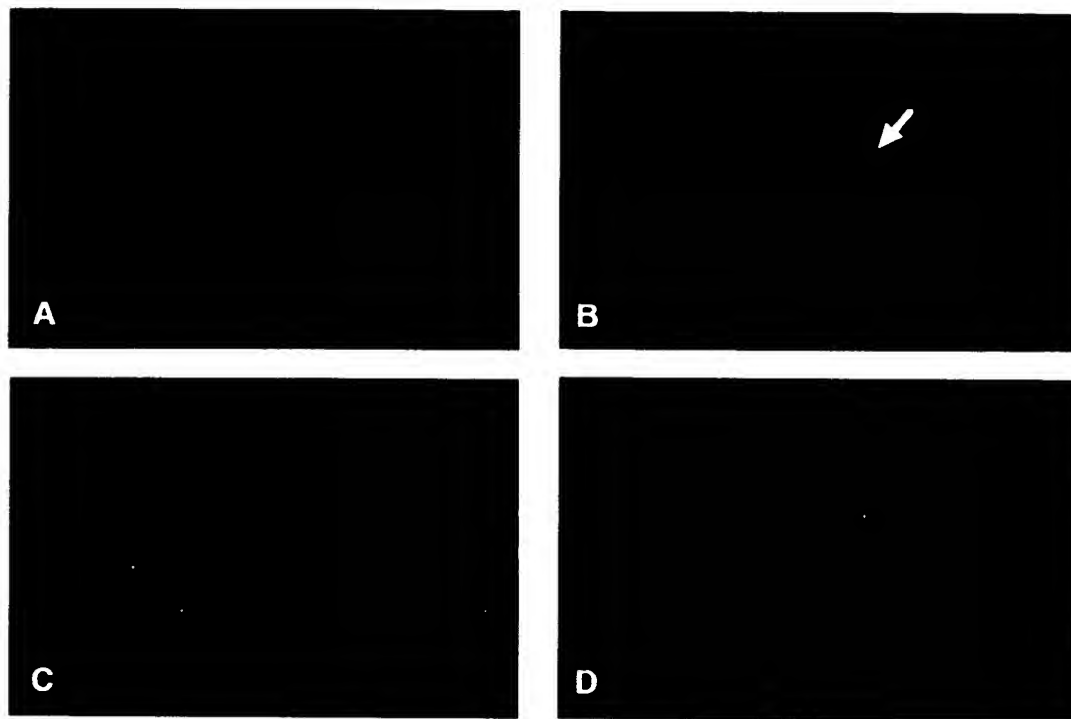


FIG. 7

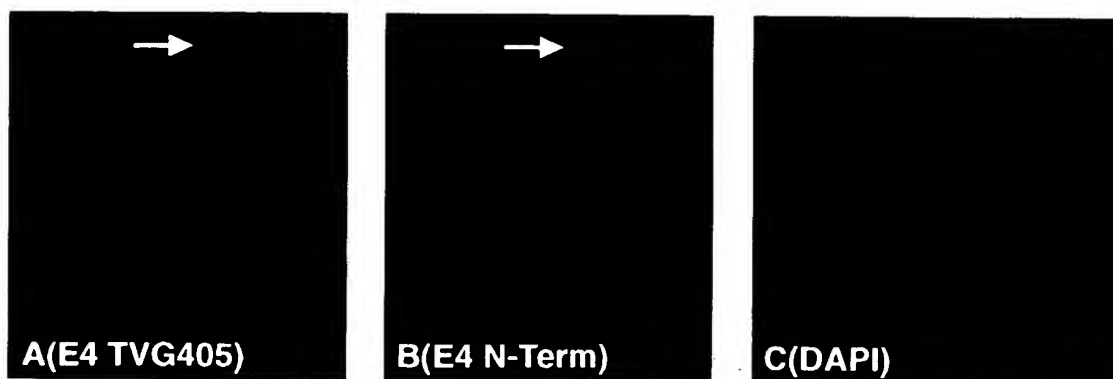


FIG. 8

CHARGED REGION....

| | | | |
|-------------|-------|---|-----|
| most-likely | | PPPPP.RP..WAGPKKP.....TRGPPRRRL....E..SDS..... | 51 |
| HPV54 | | HH....V--TT--Q-Q....SRA.....--NEL..... | 43 |
| HPV32 | ..... | --SQGV.TA..TQTAOTEY...Y-KT--PP-R.....N-T..... | 61 |
| HPV42 | ..... | -L..T.TT..TQTVOTEQ..HT-C.-SKPH-H.....N-T..... | 59 |
| HPV3 | ..... | K-RWA.--KDRS-SD....SDS.....-ST..GS.-S..... | 46 |
| HPV28 | ..... | K-RWA.--KDRS-ND....SDS.....-HST..G.-S..... | 46 |
| HPV10 | ..... | K-RWA.--RDRN-SD....SDS.....-ST..D.-T..... | 46 |
| HPV29 | ..... | K-RWG.LR..RDRNGNDA..GLKQSGLGHS...S.-S..... | 52 |
| HPV61 | ..... | --A.--P-RH-....PRC.....I..... | 49 |
| HPV2a | ..... | QEEQLR--KR..C-P-RRQ....RV.....-PS..A.-V..... | 61 |
| HPV27 | ..... | EQEQLR-Q.TC..C-P-RRH....RV.....-PS..A.-G..... | 58 |
| HPV57 | ..... | QS.....HSRTPPRR..HRV.....-HPS..A.-G..... | 53 |
| HPV26 | ..... | -T...C...--R--.....-HTQ.....--D..... | 45 |
| HPV51 | ..... | L...PA.....--HNS.....N-X..... | 42 |
| HPV30 | ..... | --RP..PHGR.....NVL..... | 46 |
| HPV53 | ..... | --T--H..HPC....G-E..N..VPE..... | 44 |
| HPV56 | ..... | --T-T...QY....PT..D..QEN..... | 42 |
| HPV66 | ..... | --L...--T--RY....PT..D..QEN..... | 42 |
| HPV18 | ..... | A....C...--QR-....A.....L..H-L..... | 44 |
| HPV45 | ..... | K....H...--QN-....S.....L..--L..... | 44 |
| HPV39 | ..... | -Q...Q...H...--Q...S.....L..... | 43 |
| HPV70 | ..... | -Q...Q...H...--L...S.....A..-VE..... | 43 |
| HPV59 | ..... | K....T...--RG-....V.....--Q..... | 44 |
| HPV7 | ..... | --T--C..TT..PT....C...--PPK..Y..TTT..... | 45 |
| HPV40 | ..... | -T--T.P..PQR-P-R....S.A-P-H-P.....--E..... | 48 |
| HPV16 | ..... | K....S...--H.....S.....--Q..... | 41 |
| HPV35h | ..... | K....A...--Q--.....-QIT..N..DFE..... | 43 |
| HPV31 | ..... | K....A...--V-V...C..GG--...L..-Q..... | 46 |
| HPV52 | ..... | -Q...C...-V...TH...TYN...HH-...N..D-D..... | 40 |
| HPV33 | ..... | .....HH-Q.....PN..D..D-L..... | 30 |
| HPV58 | ..... | .....TTK...V...H-G...Q...-D..... | 29 |
| RhPV1 | ..... | -T.....P--R-T...C...GH--...Q...-EC..... | 43 |
| HVP6b | ..... | -L...C...Q--R-T...OC...K--...G..NEH..... | 40 |
| HPV11 | ..... | LQ...C...P--R-T...AC...--G...-EH..... | 41 |
| HVP44 | ..... | HR-H-HC..L-P-RTA...W--...HV...N..DPE..... | 48 |
| HVP55 | ..... | HR-HLHC..P-P-RNA...W--...HV...N..DPE..... | 48 |
| HVP13 | ..... | -Q...C...A--R-N...VC...K--...V..N-N..... | 43 |
| PCPV1 | ..... | AQ...CH..PS..Q-I...VC...K--PI...N..DFE..... | 44 |
| HPV34 | ..... | .....THRTR...VC...QHGN...G..I--...35 | |
| HPV19 | ..... | GTRDDLPAAGPDDK-.K.-A..RN.DQG-N..PSP-RG-G-G...F..RLTGDHDPN | 93 |
| HPV25 | ..... | PPAGHDDSKPKRARGDQG-S-G..G..GP.SPA-V..SD--RG-G-G...NL--RLSGDQDP | 105 |
| HPV20 | ..... | GTGDLPLVGQGEQ-K.-A..RGDGPQS...PSPS-G-G-GR...G..TGLGLGLGL | 91 |
| HPV21 | ..... | GTGDRPVGPGER-K.-I..KG-DRG...SP-RG-G-GR...G...-PDGPGDP | 90 |
| HPV14d | ..... | EGTDADRPVGPGER-K.-G..RG-DRG...SP-RG-G-G...G...-LDPGRNR | 92 |
| HPV5 | ..... | SQGDRKRSKGDQGPDTGPGLGPRG-S-K-T..LGP-PG-G...PR-S-RLGPLQ...A..DRDPEE... | 115 |
| HPV36 | ..... | GQDGRKRSKGDQGPDTGPGLGPRG-S-G-T-Q.PL-LPP...GL--R-SP--...G...-SGYQPD... | 114 |
| HPV47 | ..... | QGDGRKRTKGDPPDPGPGPVLPKPTL--P..PT--GLRRSTRLVLV-GQGPPP...D..LPA..... | 116 |
| HPV12 | ..... | ..GDRKRSKGDQGRDTAPSLTPGRA-S-K..G..L-P-PY...GPP--R-SH--...G..TGGRD... | 107 |
| HPV8 | ..... | ..QDRKRSKGDQGRDTAPGLAPGRS-GL-G..L-P-PY...GP--R-SP-Q...F..GPGPDRDPE | 111 |
| HPV24 | ..... | PLTPDADDDPRPKRSKGDHGA-G.-A..A-PL-LDL..DPPQ-G-DQPPG...A..TGG..... | 102 |
| HPV15 | ..... | .....TTEKNLALQP--GG..KD.KDKD--TQ..QGDQ--QGGDK...K...-PG..... | 86 |
| HPV17 | ..... | .....DTGGKRLALQ--P..GTKD-TS...DDQ--HGGDK...Q...-PG..... | 79 |
| HPV37 | ..... | .....EEKHLALQ---GK..KDKE-T-Q..QGDQ--PGGNK...Q..PPG..... | 82 |
| HPV9 | ..... | .....PPPGRKDRDKEKEKEKEK.K..TT-D-G...DP.RVEQPK...G..EG..... | 93 |
| HPV22 | ..... | .....LVLQSP-SGGKGE..RDKD--Q...QGEEK-DQGP...AP..... | 74 |
| HPV23 | ..... | .....KHLALQ---G.GK..KDKE--S...PGEEK-DQGP...G..AE..... | 71 |
| HPV38 | ..... | .....DTGEKHLALQ---AG..KGD-KE...PQA-KGEEK...A..DQG..... | 71 |
| HPV49 | ..... | TLVLQPPPTPGKRSRDDDPGLEPG-ADGK.-A..PQ---AVPD-DPDLPL...DPEGP... | 120 |
| HPV4 | ..... | .....SRRA.LL..EG-NRGN...P--P-PLKPREYD..Y-E..... | 57 |
| HPV65 | ..... | .....SL-R.-ALVVG-NRGNL..NRPPQR-PKP-GY...Y-E..... | 57 |
| HPV48 | ..... | .....LE.GD.-A..SQKTPT...S--P-HP...D..YE..... | 49 |
| HPV50 | ..... | .....ANRKD.LE..AV.NQ--Y...R-PNH-P-HQ...Q..Y-F..... | 50 |
| HPV60 | ..... | .....L...T..EDR-H-R...ESLAL---V...FDYDAE..... | 55 |
| BPV1 | ..... | .....SLSL.LC..S--PPA...V...PS...QA..... | 45 |
| BPV2 | ..... | .....SLSL.LC..S--PPA...Y...PS...QA..... | 44 |
| EEPv | ..... | .....TQ-T.E..CLTLLLD...N...PPF...V..AP..... | 44 |
| DPV | ..... | .....TL...LL..E-T-FTV...PS...E...A..KTG..... | 46 |
| BPV4 | ..... | .....DL-E.T..G--SRGR...S-LRD-DHGH...DH.DRL..... | 50 |
| HPV41 | ..... | .....QRY.Y.DR..RCRDDAET..RKRGSRSPQPLS...DEE..... | 38 |
| COPV | ..... | .....L--GK.GR..HG-LDGG...--RGSPEGQ...DEE..... | 48 |
| CRPV | ..... | .....QG-K--VH...DEGO...G...HQG...C..NEG..... | 51 |
| ROPV | ..... | .....LQY-O.A..RT.IR--R.SSRY-G-F...V..T-GGDPDPQ | 55 |
| HVP1a | |T--SN.-R..PSTTPNS...QD--R--SDK...D..RK..... | 50 |
| HPV63 | |KL-EKO-R..RGRTTTR...N...-LF...A...-G..... | 46 |
| MnPV | |I--V..SLOD-TT...GGNQOR---G...RGA..... | 59 |

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.... CHARGED REGION

| | | | | |
|-------------|-------|--|---|-----|
| most-likely | | DSDSGEVEG..... | PTPTTPPAPTG..... | 72 |
| HPV54 | | E-TA.QTSN..... | H-APQT..... | 57 |
| HPV32 | ..... | --LC.SHQQ..... | S-CS-T.-SQ-Y..... | 80 |
| HPV42 | ..... | --VDSRHHS..... | TCS-QT--S-ASP..... | 81 |
| HPV3 | ..... | N-S-NSNSN..... | NI-KP--RK-LN..... | 67 |
| HPV28 | ..... | S.--..... | --KP--RK-LN..... | 60 |
| HPV10 | ..... | S--K..... | G-KI--RR-RN..... | 61 |
| HPV29 | ..... | S.T-SSSNR..... | R--P--RK-VH..... | 73 |
| HPV61 | ..... | --TET-SS..... | S--QHKTT-S..... | 68 |
| HPV2a | ..... | S----SI..... | G--LRERSE-..... | 79 |
| HPV27 | ..... | S----SI..... | SG--LRERSE-..... | 76 |
| HPV57 | ..... | S----S..... | NS--LRGRSEK..... | 71 |
| HPV26 | ..... | --VDLTPP..... | S-QS-LS-OLPH..... | 65 |
| HPV30 | ..... | EPO-PT-O..... | --PDS-L-ESPT..... | 66 |
| HPV53 | ..... | P.O-PT-L..... | TP-HS-LPO-ES..... | 63 |
| HPV56 | ..... | -P-Y.GNON..... | L--PES-TQSVS..... | 62 |
| HPV66 | ..... | -PEOVNON..... | L--PES-THTVS..... | 62 |
| HPV18 | ..... | -TVD..... | SRRSS..... | 53 |
| HPV45 | ..... | --VD..... | SOSST.....-D..... | 55 |
| HPV39 | ..... | --VQ..... | SQS-LS--E..... | 56 |
| HPV70 | ..... | S.PD..... | PQKQT..... | 51 |
| HPV59 | ..... | --VD.THS..... | -LSL..... | 56 |
| HPV7 | ..... | ATHRP-S--..... | E-E-C-SVQW-DV..... | 67 |
| HPV40 | ..... | E.TD..... | -CPS-LLWANHS..... | 63 |
| HPV16 | ..... | -Q-QTP..... | --A--LSCC-E..... | 59 |
| HPV35h | ..... | GVP..... | S----SECDS..... | 58 |
| HPV31 | ..... | E.Q-QST..... | -----TSCCEA..... | 64 |
| HPV52 | ..... | Q.T-QTP..... | --S--TTFCGD..... | 58 |
| HPV33 | ..... | QTPQ..... | --PS-LQSCSV..... | 45 |
| HPV58 | ..... | --IYQTP..... | T--S--QSIQ-A..... | 49 |
| RhPV1 | ..... | V.GQTQ--..... | IQCG..... | 55 |
| HVP6b | ..... | E.E--N..... | SPLA--CVW--L..... | 56 |
| HPV11 | ..... | V.-R..... | PL--CVW--S..... | 55 |
| HVP44 | ..... | --PPQ..... | -----ET-SVS..... | 63 |
| HVP55 | ..... | --PPQ..... | -----GT-SVS..... | 63 |
| HVP13 | ..... | EDLHVPL..... | --R-HK-LCVS..... | 62 |
| PCPV1 | ..... | --PPTVL..... | NSK--LTLCPV..... | 62 |
| HPV34 | ..... | V.TQ..... | --RG..... | 41 |
| HPV19 | ..... | PEERPPPLE----- | HP-PPVTN--GH..... | 119 |
| HPV25 | ..... | OPPEGEVOGHPOPPVTPQ..... | HL-PP-LP--N-HNDRD..... | 149 |
| HPV20 | ..... | NRRAGGLGTDHD..... | PDPEGESPSAPLPPPPPPPD-O--..... | 144 |
| HPV21 | ..... | GPIPGPGLNRLTSRNTSDPEGKCPSSLPPPPPPPOPTTPE-OG..... | HP-PP--P-HN-RD..S..... | 144 |
| HPV14d | ..... | LSGGLGTD..... | QDPDPDKKKCPESQPPPE----- | 152 |
| HPV5 | ..... | ..... | HP-PP-NGHNGH..... | 135 |
| HPV36 | ..... | ..... | GPOPPAE-----HPGG.DQGHPP-----HN-H..... | 147 |
| HPV47 | ..... | ..... | HDPEAPLE-----GGH..GHHP-PP--P--N..... | 144 |
| HPV12 | ..... | ..... | PPVE-----HPQKDRDHP-P--ONGHGK..... | 145 |
| HPV8 | ..... | ..... | RNPEE-G---.....HP-P--LSGGDP..... | 129 |
| HPV24 | ..... | DGLQP..... | PLGEGQVEGHFG-GDQPQ.....HP-P--SNGHK..... | 147 |
| HPV15 | ..... | ..... | V.GETPP.....GNEESQP--GE..... | 120 |
| HPV17 | ..... | ..... | EGT-ADGD.....D-EK--S--P-E..... | 106 |
| HPV37 | ..... | ..... | EGSDASGDEN.....A--E--QD---E..... | 103 |
| HPV9 | ..... | ..... | EGTDADGDEN.....A--E--V---E..... | 106 |
| HPV22 | ..... | ..... | -G-E...--P-Q--LP---E..... | 112 |
| HPV23 | ..... | ..... | SGEG-PPDD.....-S-EN-QN--G..... | 95 |
| HPV38 | ..... | ..... | NGGG-KPKD.....-P-EE-QN--G..... | 92 |
| HPV49 | ..... | ..... | P.EAPTG--GTP...GD-P-ED-QS--P-EG..E..... | 99 |
| HPV4 | ..... | ..... | E-.L-QPP-I.....-A-RE--GAE..... | 140 |
| HPV65 | ..... | ..... | --EK-NQ.....-GOEK--KEEE..... | 77 |
| HPV48 | ..... | ..... | --DK-NQ.....-GOER--KEEE..... | 77 |
| HPV50 | ..... | ..... | --DENR-N.....LE-P--..H-ED..... | 67 |
| HPV60 | ..... | ..... | --EDD-K-N.....TI--DTESHNON..... | 70 |
| BPV1 | ..... | ..... | -PT-.NK-N.....YP-ESR-V-KDA..... | 75 |
| BPV2 | ..... | ..... | V.GY-T-LA.....R---IF.LQAR..... | 64 |
| EEPv | ..... | ..... | V.GY-T-LA.....R---IF.LQAR..... | 63 |
| DPV | ..... | ..... | E.LAKTGV-P.....F-ARL-T-HHHP..... | 65 |
| BPV4 | ..... | ..... | VGPL.....-ARL-T-HHSP..... | 61 |
| HPV41 | ..... | ..... | RRGRTP-DE.....TRGYRV-GD-RE..... | 71 |
| COPV | ..... | ..... | LT-A...D.....P-RR-N-G-RRRL..F..... | 57 |
| CRPV | ..... | ..... | ---EE-A-N.....YP-SRS.R-RR-R..... | 69 |
| ROPV | ..... | ..... | R.Q--N-N.....RP-R-K..... | 63 |
| HVP1a | ..... | E..... | LDSTQQ-PEDK-NIP.....-S-PT-S---P..... | 83 |
| HPV63 | ..... | ..... | H.LYADGL.....TDGED-EV-EVE..... | 69 |
| MnPV | ..... | ..... | PT-E.....G-EV-EI--SD..... | 62 |
|  | ..... | ..... | RTP-P-TTA.....QR-KR-RRAC-RK..... | 81 |